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Remote Maintenance with WinCC flexible
Communication via a Wide Area Network (WAN)

Communication via a DSL Modem   **Issue 12/04**

Foreword

This document describes a possible means of connecting a PC to the wide area network (WAN) via a DSL modem.

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The entries relate to selected suggested solutions for queries with complex tasks which have been dealt with in Customer Support. We also wish to point out that current technology not does permit us to exclude the possibility of errors in software programs taking all application conditions into account. The entries have been compiled to the best of our knowledge. We cannot agree to accept any liability over and beyond the standard warranty for class C software in accordance with our "General Terms and Conditions for the Transfer of Software Products for Automation and Drive Technology". The programs are available on the Internet under individual licenses. They are non-transferable.
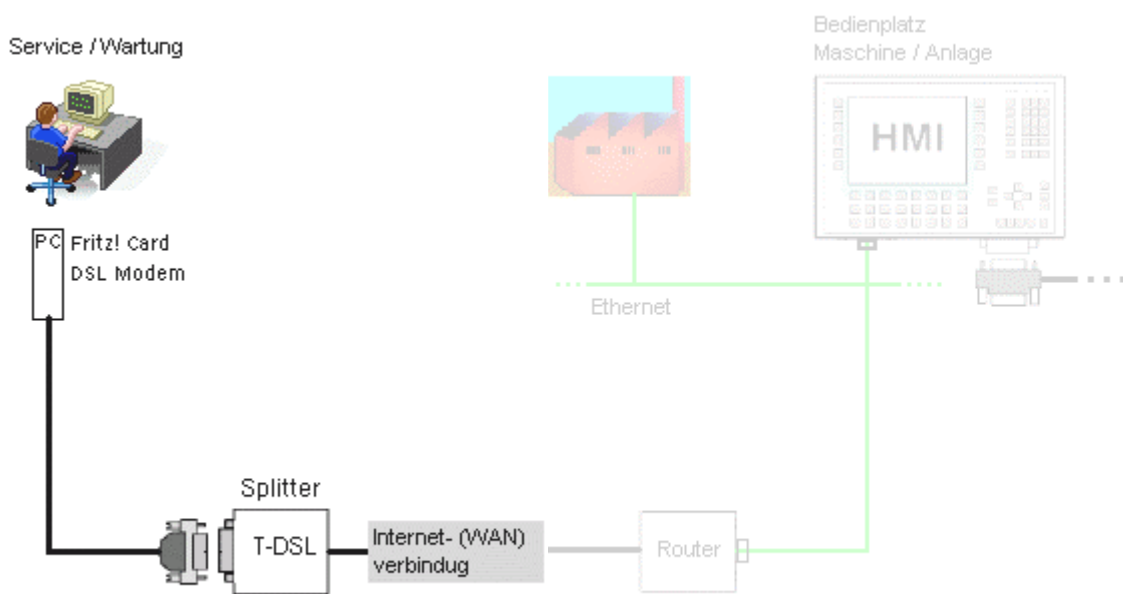
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Contents

1 PC in communication with a WAN via a DSL modem

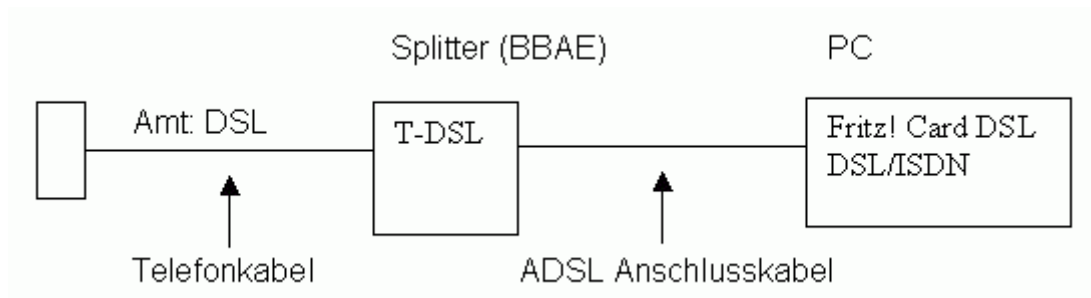## 1.1 Overview

Fig. 1-1 / Fig. 1-2

1.2   Structure of the link via DSL without a router:

Overview: PC ←→ Exchange

Fig. 1-3

1.2.1   Hardware used

Table 1-1

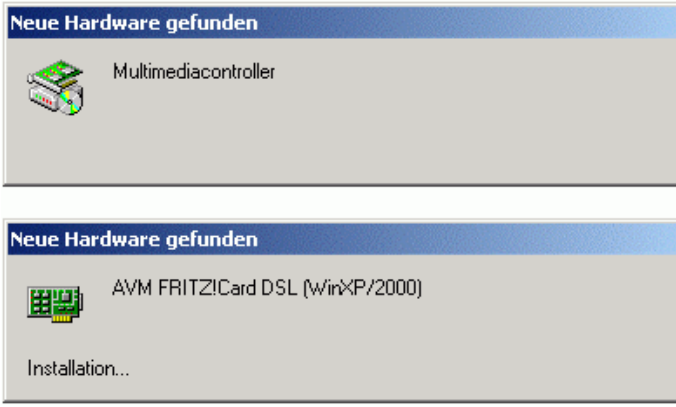| Hardware	Manufacturer	Other details
PCI card modem	Manufacturer: AVM Model: Fritz!Card DSL	May be either DSL or ISDN
Splitters	E.g. Telekom	BBAE
ADSL connecting cable	Generally included with the splitter or modem	Splitter <--> PC
Telephone cable	Included with the splitter	Exchange

1.2.2   Software used

Table 1-2
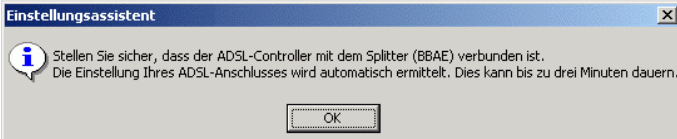
software	Manufacturer	Other details
BRICKware	BinTec	

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1.3 Configuration and installation of the DSL modem

Table 1-3

No.	Action	Note
1	The setting options, which are required, are already contained in the operating system or can be carried out with the aid of the installation software supplied with the modem. The installation procedure is minimal and only involves installing the drivers for the modem. An Internet connection with the provider data can then be created in the network settings for your operating system.	
2	Once you have installed the card in your PC, the computer detects the new hardware as soon as it is booted up.	
3	Windows 2000 and Windows XP possess a wide range of drivers and, in some cases, can therefore even identify the hardware before the software is installed. Follow the installation instructions on your screen. In our example, the operating system has already identified the modem correctly. Consequently, the following installation steps apply.	
4	The driver signatures must be confirmed first of all.	

5	Confirmation of the signatures.	
6	Confirmation of the signatures.	
7	Once the signatures have been confirmed, make a cursory check of your hardware setup once again.	
8	If you have confirmed this, automatic configuration takes place with the settings wizard	

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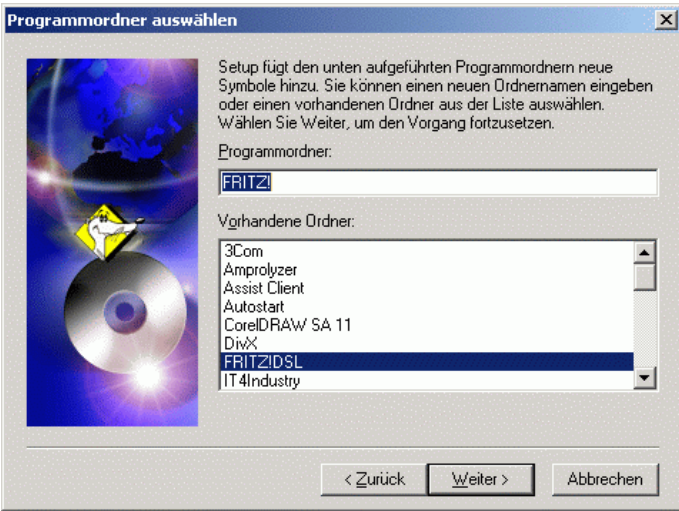
9	This may take a few minutes.	
10	Following automatic configuration, confirmation appears to indicate whether the installation process has been successful.	

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1.4 Installation of the modem driver
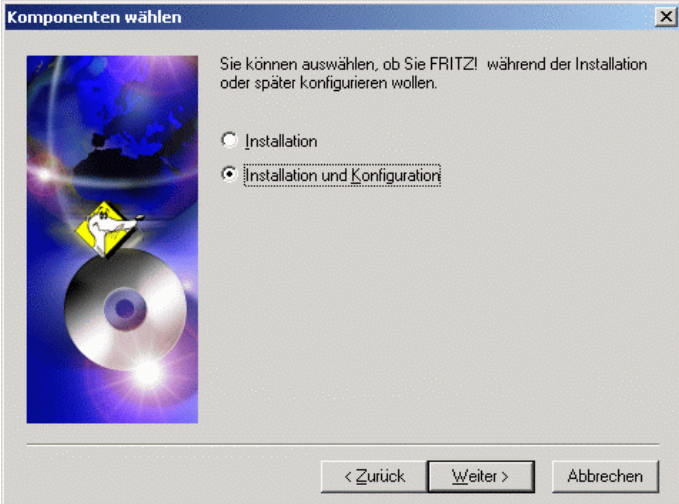
Table 1-4

No.	Action	Note
1	Insert the disk containing the installation software from the modem manufacturer and start the setup.	
2	The installation procedure may vary depending on the make. If it is different, you will find a specific description of the installation procedure in the manuals supplied with the modem.	
3	There are ISDN and DSL components installed on the Fritz!Card DSL which is used by us because user-defined installation is not available as a separate option.	
4	Once again, the installation wizard accompanies you with further information.	**Willkommen** Willkommen zum FRITZ!DSL-Setup. Mit diesem Programm wird FRITZ!DSL auf Ihrem Computer installiert. Es wird dringend empfohlen, daß Sie alle Windows-Programme beenden, bevor Sie das Setup ausführen. Klicken Sie auf Abbrechen, um Setup zu beenden, und schließen Sie danach alle geöffneten Programme. Wählen Sie Weiter, um mit dem Setup fortzufahren. Diese Programme und die zugehörige Dokumentation sind durch Urheberrecht und internationale Vereinbarungen geschützt. Unberechtigte Reproduktion und nicht genehmigter Vertrieb der Programme oder Teile davon sind nicht gestattet. Weiter > / Abbrechen
5	First of all, specify the required installation path and then click **Next** to continue.	**Zielpfad wählen** Setup wird FRITZ!DSL in folgendem Ordner installieren. Klicken Sie auf Weiter zur Installation in diesem Ordner, auf Durchsuchen zur Auswahl eines anderen Ordners. Wählen Sie Abbrechen, um Setup zu beenden, wenn FRITZ!DSL nicht installiert werden soll. Zielordner C:\Programme\FRITZ!DSL — Durchsuchen... < Zurück / Weiter > / Abbrechen

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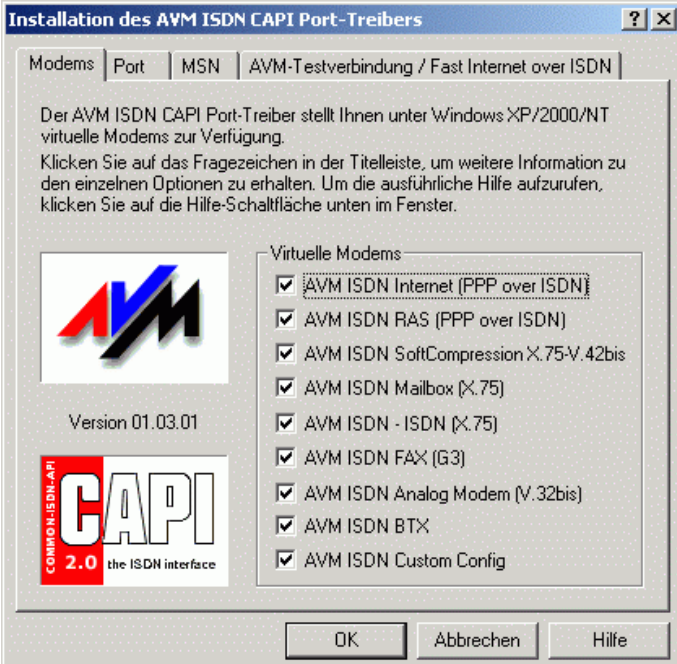
6	The next steps only have to be confirmed or adapted to suit your circumstances where necessary (naming, installation path, etc.). Click **Next** to continue.	
7	Click **Yes** to confirm.	
8	Click **Next** to continue.	

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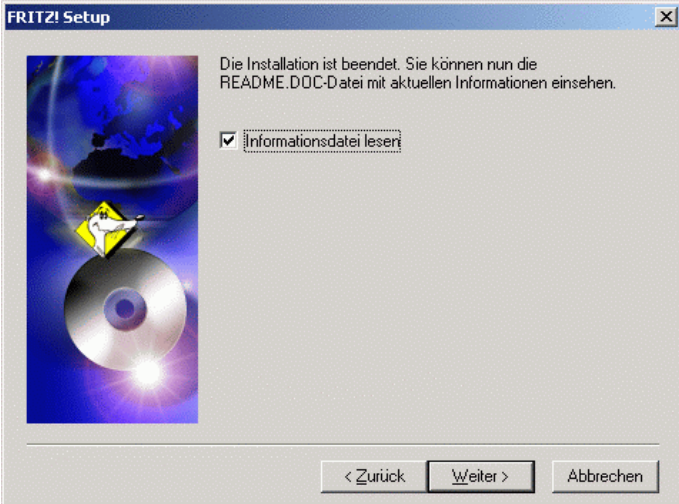
9	You can change the destination folder here. Click **Next** to continue.	
10	You can change the name of the program folder here. Click **Next** to continue.	
11	Once you have progressed through the windows, you will now reach the part where configuration takes place. You can skip this part or enter your provider's data straight away..	

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12	Select **Installation and configuration**. The configuration can always be changed at a later date.	
13	Operation on an extension is only necessary if you have to dial a number on your telephone before being able to call an external number.	
14	The fax settings are not defined because this utility is not necessary for communication of WinCC flexible via a modem route.	

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15	The settings displayed here are only required for your personal handling requirements.	
16	The CAPI drivers are only intended for ISDN and do not need to be installed for a DSL connection. Since the Fritz!Card DSL is a combination modem which supports ISDN and DSL systems, install the CAPI drivers as well.	
17	All the other settings that are documented in the screenshots only relate to the CAPI driver and have not been changed by us..	

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18	Please de-select any virtual modems that are not required and click **OK** to continue with the installation. .	
19	Once the next few windows have been confirmed, the installation is complete.	

20	For your information read the Readme file because it contains important tips or restrictions concerning the modem.	
21	Following completion your computer must be restarted so that the drivers are correctly registered. The modem is ready for service following the restart	
22	f your operating system does not automatically identify the devices, you can always find the drivers for them on the enclosed manufacturer's CD. The hardware wizard searches for the drivers itself on the CD if it is in the drive. The remainder of the installation procedure should run as described in this FAQ.	
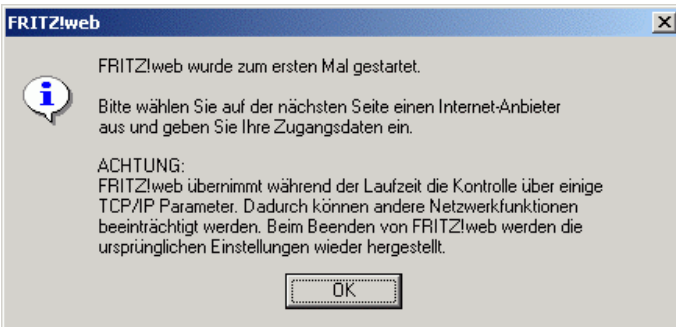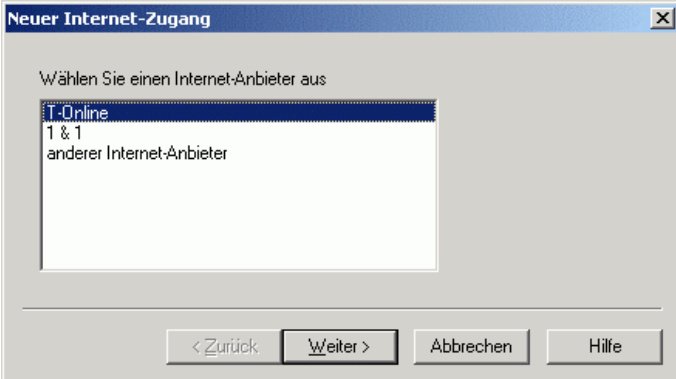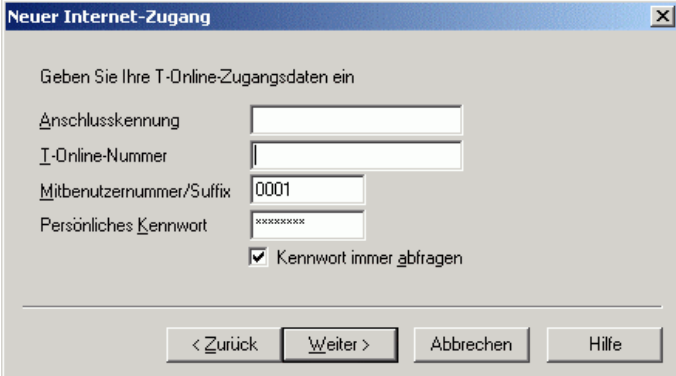
1.5 Configuration of Internet access
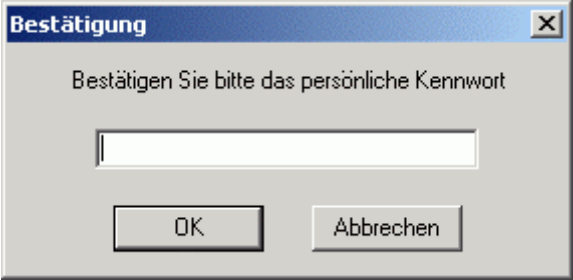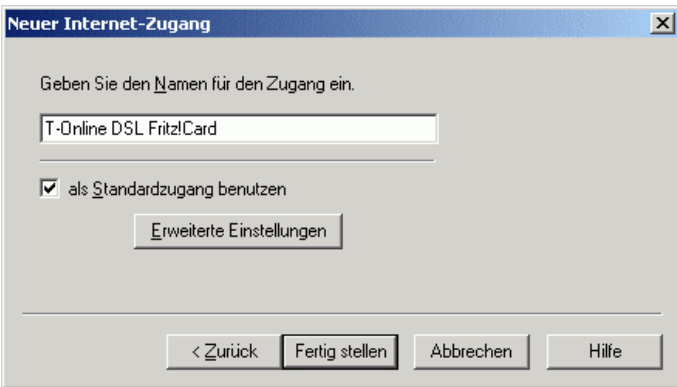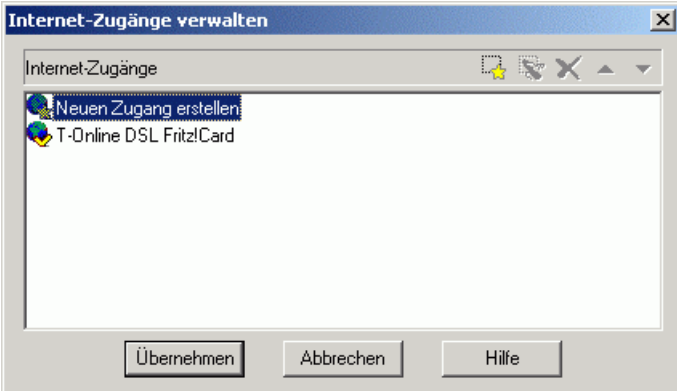
Two options are described below.

- Internet access via FRITZ! software
- Internet access via a standard dial-up connection

1.5.1 Internet access via FRITZ! software
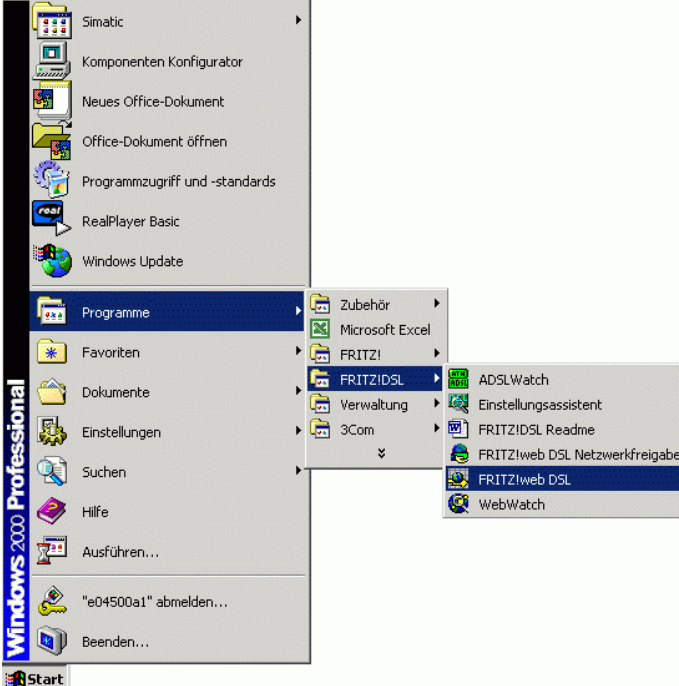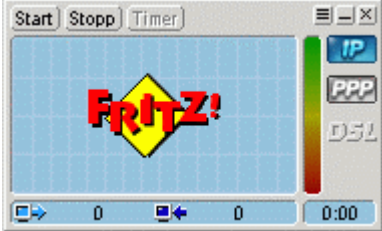
Table 1-5
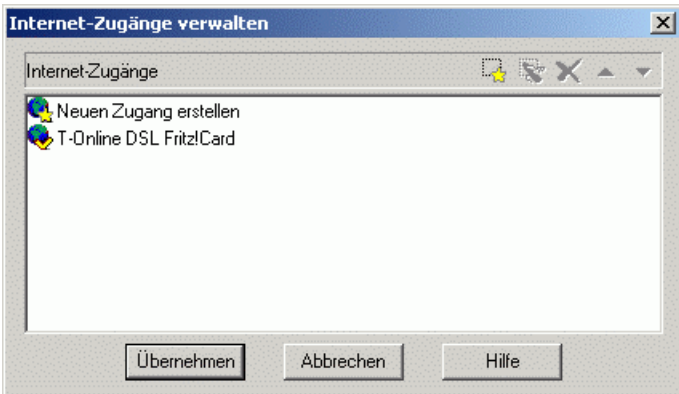
No.	Action	Note
1	**Note:** The dialogs may vary between makes, however the settings are similar	
2	This dialog only appears when the FRITZ software is first started. After you click **OK** to confirm, you go to the following selection window in which you are given a choice of known Internet service providers.	**FRITZ!web** FRITZ!web wurde zum ersten Mal gestartet. Bitte wählen Sie auf der nächsten Seite einen Internet-Anbieter aus und geben Sie Ihre Zugangsdaten ein. ACHTUNG: FRITZ!web übernimmt während der Laufzeit die Kontrolle über einige TCP/IP Parameter. Dadurch können andere Netzwerkfunktionen beeinträchtigt werden. Beim Beenden von FRITZ!web werden die ursprünglichen Einstellungen wieder hergestellt. OK
3	Select an ISP and enter your personal data in the relevant boxes.	**Neuer Internet-Zugang** Wählen Sie einen Internet-Anbieter aus T-Online 1 & 1 anderer Internet-Anbieter < Zurück Weiter > Abbrechen Hilfe
4	You can obtain the data that you require for this dialog from your Internet service provider in writing, by e-mail or directly from the Internet. When you click **Next** to continue, you are asked to confirm your password again.	**Neuer Internet-Zugang** Geben Sie Ihre T-Online-Zugangsdaten ein Anschlusskennung T-Online-Nummer Mitbenutzernummer/Suffix 0001 Persönliches Kennwort ******** ☑ Kennwort immer abfragen < Zurück Weiter > Abbrechen Hilfe

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5	Password confirmation	
6	Finally, you can assign a name to the Internet connection that you have created.	
7	Click **Apply** to confirm the data.	

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Changing the access data

Table 1-6
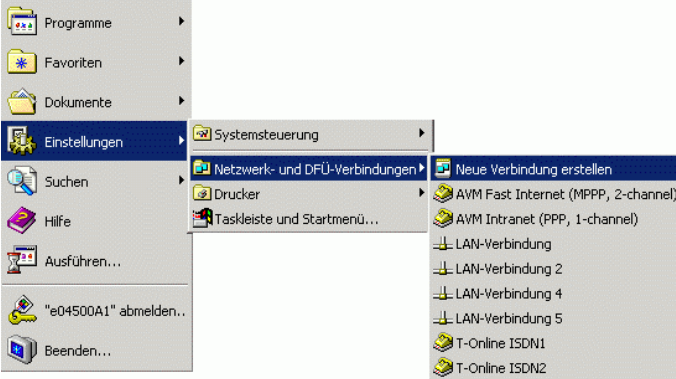
No.	Action	Note
8	The data can also be changed or deleted afterwards by starting **FRITZ!web DSL**.	
9	After opening, right-click the window.	

10	Select the **Manage Internet access** option.	
11	You can make any changes you wish to your Internet access settings by double-clicking the connection.	

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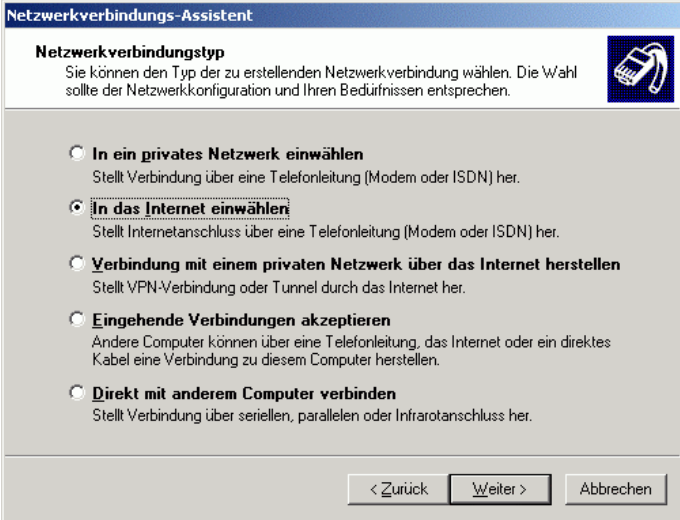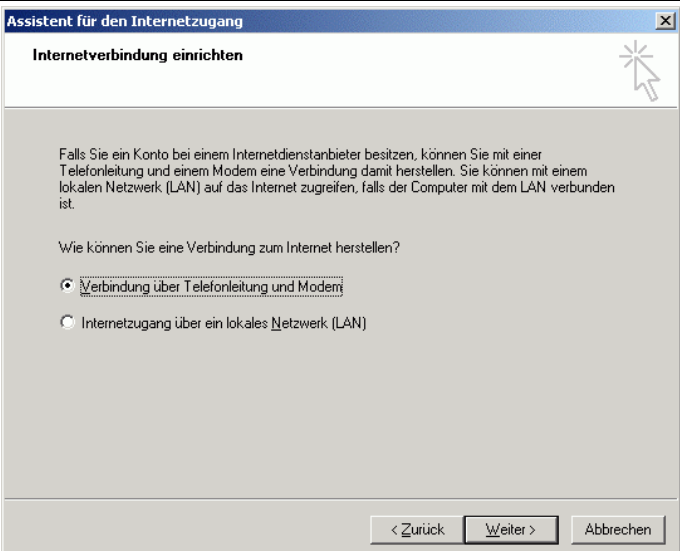
1.5.2 Configuration of a dial-up connection
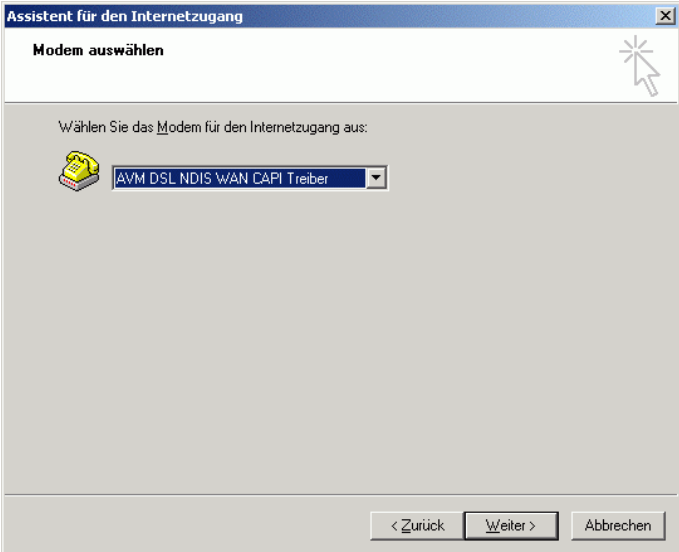
A dial-up connection is configured completely via software components that are already installed in your operating system

Tabelle 1-7

No.	Action	Note
1	Start the function via Start > Settings > Network and dial-up connections > **Create a new connection**.	
2	When you create your dial-up connection, you are guided through the individual steps of the installation by a wizard.	
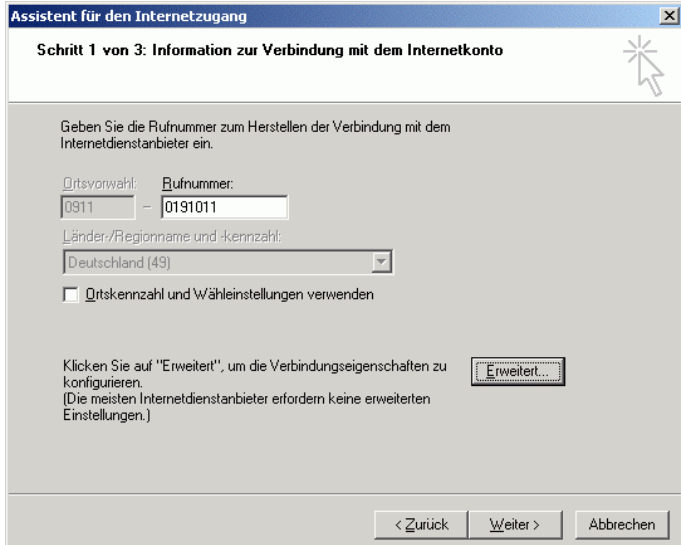
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3	In the first dialog select the option **Connect to the Internet**.	Netzwerkverbindungs-Assistent **Netzwerkverbindungstyp** Sie können den Typ der zu erstellenden Netzwerkverbindung wählen. Die Wahl sollte der Netzwerkkonfiguration und Ihren Bedürfnissen entsprechen. ○ **In ein privates Netzwerk einwählen** Stellt Verbindung über eine Telefonleitung (Modem oder ISDN) her. ● **In das Internet einwählen** Stellt Internetanschluss über eine Telefonleitung (Modem oder ISDN) her. ○ **Verbindung mit einem privaten Netzwerk über das Internet herstellen** Stellt VPN-Verbindung oder Tunnel durch das Internet her. ○ **Eingehende Verbindungen akzeptieren** Andere Computer können über eine Telefonleitung, das Internet oder ein direktes Kabel eine Verbindung zu diesem Computer herstellen. ○ **Direkt mit anderem Computer verbinden** Stellt Verbindung über seriellen, parallelen oder Infrarotanschluss her. < Zurück Weiter > Abbrechen
4	In the next dialog select the **Manual setup** option because the Microsoft wizard otherwise retrieves the values from the Internet, in which case you have no influence over the settings.	Assistent für den Internetzugang **Assistent für den Internetzugang** Mit Hilfe des Assistenten für den Internetzugang können Sie eine Internetverbindung herstellen und ein neues oder bestehendes Internetkonto einrichten. ○ Anmelden und diesen Computer für ein neues Internetkonto konfigurieren. (Die Verbindung zwischen DFÜ-Netzwerk und Modem besteht.) ○ Bestehendes Internetkonto auf diesen Computer übertragen. (Die Verbindung zwischen DFÜ-Netzwerk und Modem besteht.) ● Manuelle Einrichtung der Internetverbindung oder Verbindung über ein lokales Netzwerk (LAN) herstellen. Klicken Sie auf "Abbrechen", um die Interneteinstellungen unverändert zu lassen. Klicken Sie auf "Lernprogramm", um mehr über das Internet zu erfahren. Lernprogramm < Zurück Weiter > Abbrechen
5	In the settings that follow, select **Connection via a phone line and modem**. Selecting Internet access via a local network is not an option in the case of a DSL connection if you are using a PCI card modem (as in the example described here). **Note:** In the case of configuration with external DSL modems, the "**Internet access via a local network (LAN)** connection needs to be defined.	Assistent für den Internetzugang **Internetverbindung einrichten** Falls Sie ein Konto bei einem Internetdienstanbieter besitzen, können Sie mit einer Telefonleitung und einem Modem eine Verbindung damit herstellen. Sie können mit einem lokalen Netzwerk (LAN) auf das Internet zugreifen, falls der Computer mit dem LAN verbunden ist. Wie können Sie eine Verbindung zum Internet herstellen? ● Verbindung über Telefonleitung und Modem ○ Internetzugang über ein lokales Netzwerk (LAN) < Zurück Weiter > Abbrechen
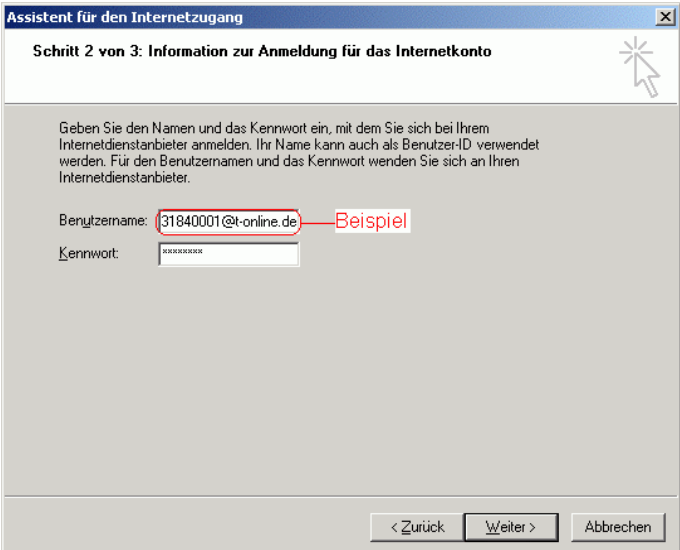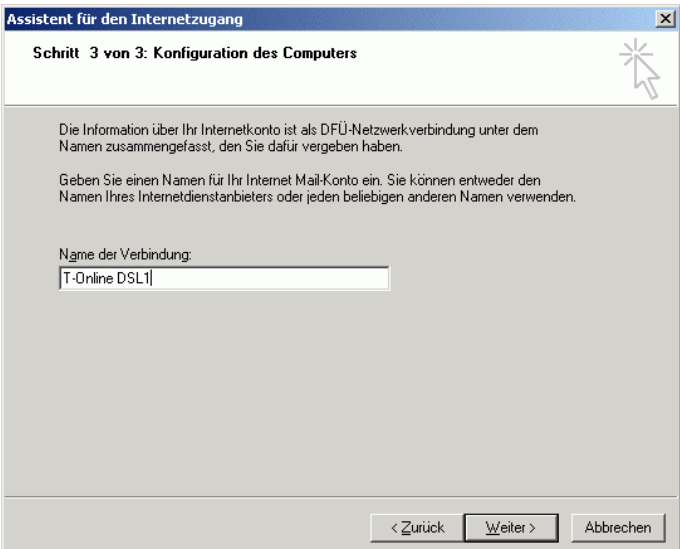
	In the case of closed company Intranets, an automatic configuration script is generally loaded, containing the settings, by specifying a proxy server when this option is selected	
6	Select the installed modem with the **AVM DSL NDIS WAN CAPI driver**. **Note:** If there are no devices entered in your list, this indicates that your modem or your DSL card is not correctly installed. In this event, check that you have carried out all the installation steps that the manufacturer of the device has recommended.	
7	Now you come to the settings that are particularly important for your Internet service provider. They differ from our settings. However, this procedure is always described on the ISP's website. We describe Telekom's details here.	

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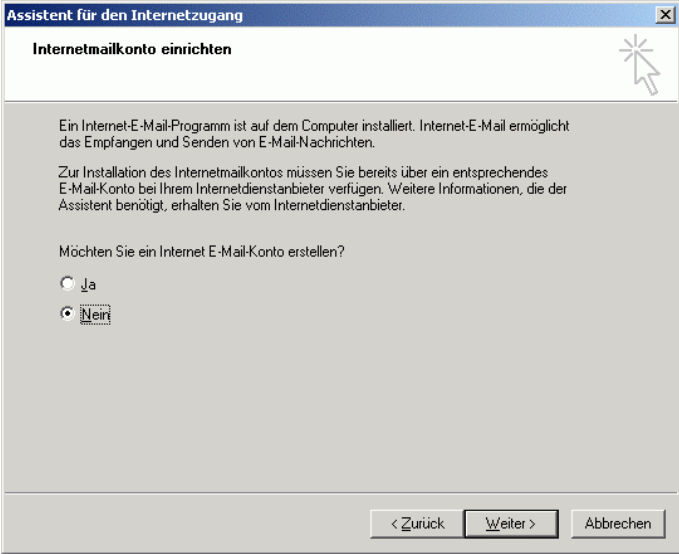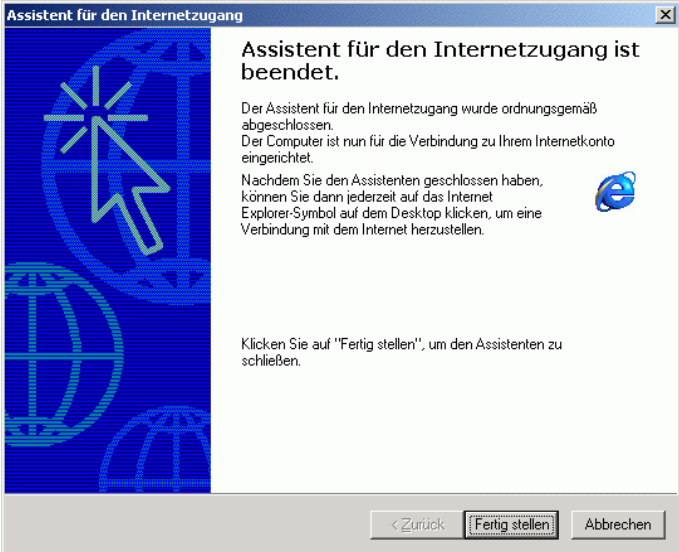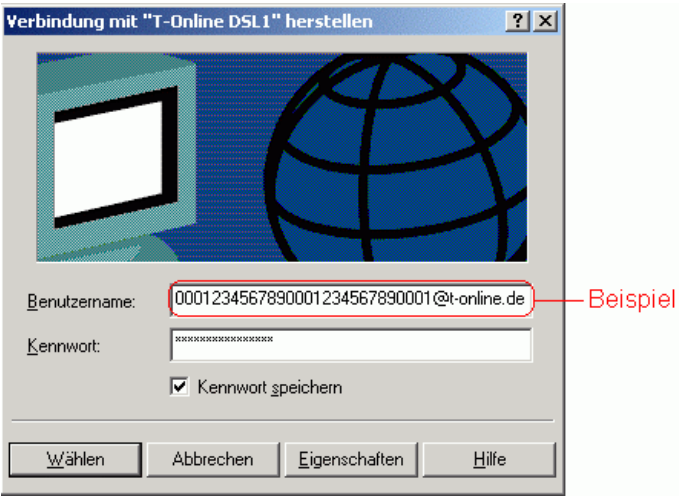
Entering access data

Table 1-8

No.	Action	Note
8	**Phone number:** There is no need to assign a phone number in DSL. **Note:** A dummy number must be entered.	
9	**Phone number**	

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10	**User name:**
	Enter the following numbers in this box in consecutive order, inserting no spaces, in this box: line identification (12-digit) + T-Online number (generally 12-digit) + co-user number (always 0001 for the main user). If your T-Online number is less than 12 digits long, you will need to insert the "#" character between the T-Online number and the co-user number. If you are using T-DSL, you will have to add "@t-online.de" to the end of this string of numbers. **Example:** Your user name could then look like this: 000123456789061123456789#0001@t-online.de
11	**User name** (see description above) **Password:** Enter your access password in this box. (Your personal T-Online password).
12	Assign a name to your connection.

For row 11 and 12, screenshots appear on the right side:

Row 11 screenshot — Assistent für den Internetzugang, Schritt 2 von 3: Information zur Anmeldung für das Internetkonto. Benutzername: 31840001@t-online.de — Beispiel. Kennwort: ********

Row 12 screenshot — Assistent für den Internetzugang, Schritt 3 von 3: Konfiguration des Computers. Name der Verbindung: T-Online DSL1

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13	No e-mail account has been created in this example. This is not necessary for communication. You can also create an e-mail account directly online on the individual ISP's websites, e.g. GMX, Freenet, T-Online, Web.de, etc.	
14	You have now successfully created a dial-up connection and can perform a function test immediately with the Internet Explorer.	
15	Start > Settings > Network connections > **T-Online DSL1**. After double-clicking the icon, the following dialog appears. When you click **Dial**, the following control window must appear..	

16	Control window: The connection to ….	Verbindung hergestellt Die Verbindung mit "T-Online DSL1" wurde hergestellt. Klicken Sie mit der rechten Maustaste auf das Symbol im Ordner "Netzwerkverbindungen" oder klicken Sie auf das Symbol in der Taskleiste (falls vorhanden), um den Status der Verbindung zu überprüfen oder die Verbindung zu trennen. ☐ Diese Meldung nicht mehr anzeigen OK

Entering a password:

Windows allows you to keep your password permanently saved.
However, bear in mind that a password that is saved in the computer can be spied on by other users or special programs.
Therefore, for security reasons you should not save it, you should re-enter it every time you connect.

If you wish to browse the Internet or view your system with WinCC flexible, the computer must already be connected and online.

The dialog for the Internet connection is not automatically called as you are used to with the Internet Explorer.
Since this type of connection via modem is mainly only used for short-term monitoring, there is no need to place the connection in Autostart.

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2   Glossary

Table 2-1

No.	Abbreviation	Description
1	ADSL	Stands for Asymmetric Digital Subscriber Line.
		ADSL supports the use of the infrastructure in the existing phone network for broadband utilities. Additional data for Internet utilities is transmitted on the copper two-core conductors of the analog and digital telephone lines (POTS or ISDN) in the case of ADSL. For this purpose, the spectrum of frequency used by ADSL is divided into several sections. This enables the telephony and data signals to be transported side-by-side between the subscriber's line and the local exchange. There is a splitter on either side to separate and combine the signals.
		In ADSL, the maximum transmission rate that can be achieved is asymmetric in both directions, upstream and downstream. ADSL supports upstream transmission of up to 1.5 MBit/s and downstream of up to 8 MBit/s. However, as the transmission rate which can be achieved drops significantly the further apart the local exchange and subscriber are, these values cannot be achieved in practice for the majority of lines.
		The asymmetric DSL variants, in which there is a speed of up to 256 kBit/s available for upstream and up to 3 MBit/s available for downstream, are particularly suitable for private users and small businesses who do not wish to make large volumes of frequently requested Internet content available on their PC for other users.
2	BBAE	Stands for Broadband Access Equipment.
		The BBAE represents a subscriber's physical terminal a line that is used for broadband. It separates the provider network from the subscriber line cable and conditions the signals for transmission via the connection element.
		In the case of ADSL connections, the BBAE generally also features the splitter that separates the broadband and narrow band signals from one another and combines them again.
3	CAPI	Stands for Common Application Programming Interface.
		A standardized software interface for communication between software and hardware.
		CAPI is the name of a program which is supplied with an ISDN card and which is used to activate it. Other programs that wish to transmit data via the card only have to pass this data on to the CAPI driver.
4	DSL	Stands for Digital Subscriber Line.
		DSL technology enables data transmission to be accelerated substantially via conventional phone lines, making it especially suitable for high-speed Internet use. ISDN services or analog telephony continue to run undisrupted on the same line. The high transmission rates are achieved by enlarging the frequency range

		used. For example, ADSL supports transmission rates of up to 8 MBit/s. Lines with capacities of 768 kBit/s are very common.
		The name DSL represents a whole family of technologies that are combined under the collective term xDSL. In Germany, lines for private customers are mainly offered with asymmetric DSL (ADSL) and single pair DSL (SDSL) technologies. ADSL, which is much more common, transmits the Internet data in the existing telephone network above telephony frequencies between 138 and 1,104 kHz. For example, ADSL is also the basis for the T-DSL product offered by Deutsche Telekom AG.
5	DynDNS	The term DynDNS stands for dynamic DNS and is meant to indicate that you as the customer can enter the IP address belonging to a name in the DNS server yourself.
		The partner's IP address is contacted, and the connection is established. However, since fixed IP addresses are expensive, most users connect to service providers and are assigned a dynamic IP address. This changes every time you connect (hence the term dynamic), making it impossible to locate a partner with a dynamic IP address. DynDNS servers on the Internet offer assistance in this respect. They enable partners to be located despite their dynamic IP address. If the partner is known, i.e. if its IP address is known, there is nothing to prevent communication. In the interests of security, communication with the partner can be encrypted with the aid of IPSec, for example, in a second step.
6	IPsec (Internet Protocol Security)	IPSec is a protocol that can be used to establish a secure IP connection. A distinction is made between two modes: 1. Tunnel mode The entire IP package is encrypted in this mode. Tunnel mode is primarily used to transmit data between two company locations or between a private PC and a company network (to enable staff to work from home, for example) via the Internet secure from monitoring (VPN). 2. Transport mode Here only the data part is encrypted. This is used to transmit critical data, e.g. in passwords.
7	ISDN	Stands for Integrated Services Digital Network. The striking feature of ISDN phone lines is that there are at least two basic access channels (B-channels) available for use simultaneously. This means that a subscriber is contactable by phone whenever it is online or sending a fax. It also supports two parallel phone calls from one line. In addition, higher transmission rates are possible than with an analog line. Each B-channel can transmit 64 kBit/s, i.e. the two together support 128 kBit/s. ISDN digital transmission and switching technology supports diverse forms of communication on the phone line such as telephony, faxing

		or Internet connections. ISDN continues to use the cabling from the previous analog telephone network in order to connect the customers to the exchange. However, ISDN technology uses this with much greater efficiency and flexibility. Connections can be established more quickly, speech quality is much improved, and not only is data transmission is quicker, it is also extremely reliable thanks to error correction.
8	NTBA	Stands for Network Termination Basic Rate Access. The NTBA forms the network termination to the public ISDN network. It converts the signal from the network provider from its two-wire line (UK0 bus) to a four-wire line (S0 bus). The exchange supplies current to the NTBA via the ISDN supply voltage – the NTBA, in turn, supplies the S0 bus. In normal operating mode, power is also fed to the NTBA via a power supply unit. In this mode it can supply up to four terminals which are connected to the S0 bus and which do not possess a power supply of their own. If the NTBA is operated without an additional power supply unit or if the power supply fails, the NTBA uses the network provider's ISDN supply voltage in order to operate on standby.
9	Port Forwarding	Port forwarding is a technology which supports the mapping of ports to IP addresses in NAT networks (Network Address Translation), i.e. if router ports have to be forwarded permanently to a specific IP address. This mapping technology is a function offered by many of the current DSL routers. For this purpose, the advanced settings for the router generally include a table in which a port that has to be mapped is permanently allocated to a specific local IP address.
10	Routers	Routers are first and foremost hardware devices or software programs that can be used to connect one or more computers or whole networks to other networks. The router acts as the control center in order to forward connection requests to the required network or the service. In addition to their basic functionality, hardware routers and, in particular, the current ISDN or DSL routers possess DHCP services or servers which can be used to manage address allocation and control centrally. Depending on the settings, IP addresses can be supplied in this way to whole networks which is beneficial to inexperienced users, in particular.
11	Splitters	Splitters In ADSL lines, the splitter divides the incoming signal from the provider network into the broadband ADSL signal and the narrow band ISDN signal or analog telephone signal. For transmission in the opposite direction, the two parts of the signal are combined to facilitate simultaneous transmission via the subscriber line. The splitter is frequently contained directly in the broadband access equipment (BBAE).

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12	TCP	TCP, which stands for Transmission Control Protocol, is an important component of the TCP/IP protocol. It is based on connections and requests receipt of confirmation for every package sent.
13	TCP/IP	TCP/IP stands for Transmission Control Protocol/Internet Protocol. This generally refers to the whole family of protocols. It was developed to facilitate connection between computers in different networks. Nowadays TCP/IP is used in many LANs (Local Area Networks) and is the basis for the world wide web.
14	T-DSL	Deutsche Telekom has been offering DSL lines under the name T-DSL since the late 90s. T-DSL is the most commonly used variant of DSL, which also makes it the most common type of broadband Internet access in Germany. Deutsche Telekom is not the only organization which offers T-DSL access to the Internet via its subsidiary T-Online, this is also available from a relatively large number of resellers. However, they all use Deutsche Telekom infrastructure to establish the physical link to the customer. The remaining providers primarily use their own versions of ADSL or else SDSL, although this works symmetrically and supports data rates of up to 2.3 MBit/s.
15	VPN (Virtual Private Network)	Company employees can use a Virtual Private Network (VPN) to connect to the company network (Intranet) from home or from locations outside the company via the Internet. A number of company sites can also be linked this way. The advantage of this is that there is no need for modem links or leased channels, simply a connection to the Internet. The employee connects to the Internet first of all. An encrypted channel (tunnel) is then established between the VPN client and VPN server. Following authentication via user name and password or public key/certificate, an encrypted IPSec tunnel is set up via which data can be transmitted without risk of being monitored.
16	WAN	The term WAN (Wide Area Network) refers to networks which transmit data over a larger distance than a LAN (Local Area Network).

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3 Warranty and Support

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